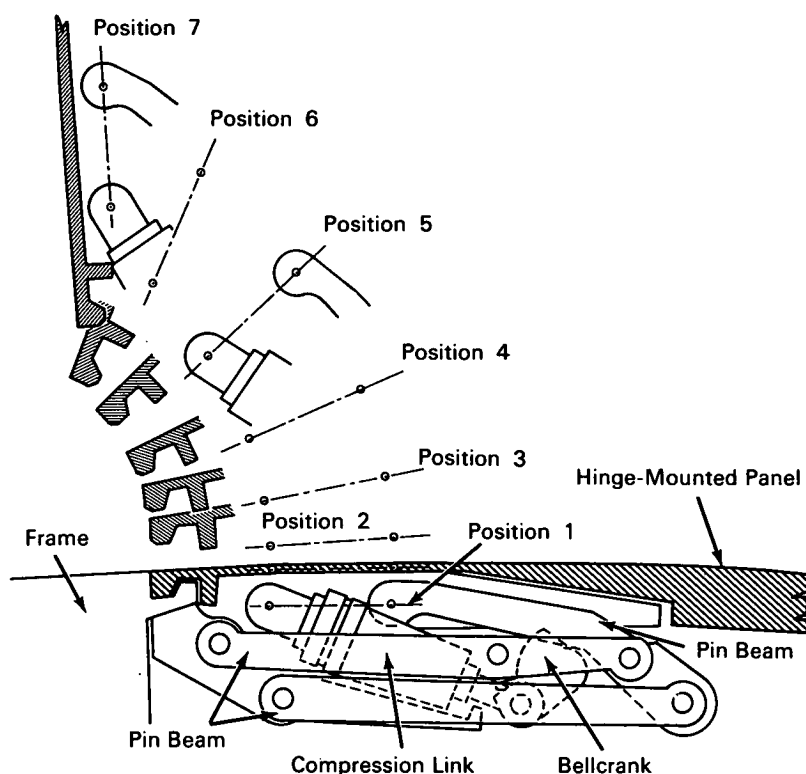


NASA TECH BRIEF



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Concealed Hinge Permits Flush Mounting of Doors and Hatches



The problem:

To hinge a closure so that the axis of instant rotation, produced by the hinge, lies outside the panel surface and beyond the perimeter adjacent to the hinge.

The solution:

A hinge assembly that permits flush mounting of doors and hatches of considerable thickness. In operation, motion of the assembly is initially parallel, changing to angular after clearing the panel perimeter.

How it's done:

The hinge assembly is a compound mechanical linkage consisting of three pin beams, two pin links, a spring-loaded compression link, a bellcrank, and two mounting brackets. As the hinge-mounted panel is moved from the closed position, the outer arm and inner link rotate counterclockwise about the hinge pins. The bellcrank rides along on the outer beam but is forced to rotate clockwise by the link

(continued overleaf)

attached to the inner hinge pin. This rotation thrusts the spring loaded compression link outward, maintaining the angular rotation of the panel to near zero until it has moved clear of the surrounding structure. The hinge assembly produces an axis of instant rotation that changes as the panel is moved. At position 1, the axis produces a very long radius that permits the panel to clear the opening. Further movement of the panel reduces the radius until the axis of instant rotation lies outside the surface and directly above the frame. At position 7, the hinge assembly is fully extended and the panel is open at a 93° angle.

Notes:

1. The device could be used wherever hidden hinges are required.

2. The spring loaded compression link is adjustable to compensate for warpage in the door or hatch panel.
3. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B66-10336

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: Earl V. Holman
of North American Aviation, Inc.
under contract to
Manned Spacecraft Center
(MSC-623)